1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

elevements, as at Pico Pinacate, in northwestern Sonora. The various rocks are usually bare or meagerly mantled with talus in the mountains; over the greater part of the plains they are commonly veneered with sheetflood deposits, ranging from a few inches to a few yards in thickness; while the central portions of the larger valleys are lined with alluvial accumulations reaching many hundreds of feet in thickness. 133

The clearly interpretable geologic history began with extensive degradation and eventual baseleveling of a granitic terrane in Paleozoic or early Mesozoic time; then followed the deposition of the shales and associated limestones during the later Mesozoic; next came elevation, accompanied or followed by corrugation, chiefly in folds parallel with the present coast, whereby the granite-based sierras were produced, and accompanied also by the earlier vulcanism to which the volcanic sierras owe their existence. A vast period of degradation ensued, during which the land stood so high as to induce greater precipitation than that of today and to permit the streams to carve channels far below the present level of tide, and during which the present general configuration was developed; then came the southwestward tilting and consequent climatal desiccation, the filling of the deeper valleys, the inauguration of sheetflood erosion, some local vulcanism, and the progressive shifting of the divides.

The geologic structure affects the hydrography, especially that factor determined by subterranean circulation, or ground-water; for the superficial sheetflood and alluvial deposits are highly pervious and many of the volcanics hardly less so, while the shales and limestones are but slightly pervious and the granites nearly impervious. The geologic structure also determines the character of the soil with exceptional directness, since the dryness of the air and the dearth of vegetation reduce rock decay to a negligible quantity. The characteristically precipitous sierras and cerros are of naked ledges, save where locally mantled with a mechanical debris of the same rocks (much finer than the frost product of colder and humider regions); the soil of the normal plains is but the little-oxidized upper surface of sheetflood deposits made up of the mechanical debris of local rocks and varying in coarseness with the slope; while the soil of the valleys is detrital sand and silt, derived from tributary slopes, passing into adobe where conditions are fit, and essentially mechanical in texture and structure save where cemented by ground-water solutions at the lower levels. 134

Flora

The flora of the Sonoran province affords a striking example of the adjustment of vegetal life to an unfavorable environment. The prevailing vegetation is perennial, of slow growth and of stunted aspect; and it is not distributed uniformly but arranged in separate tufts or clusters, gathering into a nearly continuous mantle in wetter spots, though commonly dotting the plains sparsely, to completely disappear 137

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

132 The broad valley between Sierras Seri and Kunkaak, bottomed by El Infiernillo, is especially beset by fierce and capricious gales; the general atmospheric drift is disturbed by the leading and lesser sierras, as well as by temperature convection from the gulf, and eddies are developed in such wise as to send air-currents directly or obliquely up or down the valley. These local or sublocal winds are characteristic. Judging from observations covering several weeks, the valley is wind-swept longitudinally for an average of eighteen or twenty hours daily, the winds ranging from strong breezes to gales so stiff as to load the air with sand ashore and spray seaward; and even the calms may be broken

[122]

FIG. 5.—Embarking on Bahia Kunkaak in la lancha Anita.

any minute by sudden gusts and williwaws, passing rapidly as they arrive. Not only waves but wind itself combines with tides to shape the [134] structural features of the valley; nowhere within it do flour-fine sands like those of Desierto Encinas occur, save as a hardly perceptible constituent of the dunes and banks of coarser sand—they have been blown into the sea or beyond the limits of the valley. Throughout the strait 132 so expressively named by its explorers, the capriciousness of the sea 133 culminates, despite the shoalness and the protection from easterly and westerly winds; the storm currents and tide-currents are half the time opposed, raising breakers even when the air is nearly still; eddies and whirls and cross-currents arise constantly, and even at the stillest

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I

INTRODUCTION

The territory discussed in this paper is somewhat larger than the historical area occupied by the Seris. While Seri settlements are limited today to a quite narrow range, the Tiburon Island and the coast of Sonora immediately adjacent to it, they are familiar with a far larger region, owing to their periodic trips, either on their own after fish, turtle and game or, occasionally, in the temporary employ of the Mexican fish-traders and even farmers. The further away from Tiburon perimeter, the lesser their familiarity with a locality.

The area is limited by Hermosillo in the east, Punta Penasco and Porto Libertad in the north, and Nogales in the south, and finally it includes also the coast of Baja California which the Seris sometimes visit. It also includes all of the islands within that area, Tiburon, Patos, Rasa, Angel de la Guarda, San Lorenzo and San Esteban.

With very minor variations this entire region belongs properly to the Sonoran desert. *Palo Verde, Palo Fierro, Pithaya, Mesquite, Cholla, Sahuaro,* prickly pear, elephant tree and creosote bush are the basic plants. Among the vertebrates, such forms as the Sonoran bighorn, deer, cougar, jumping rat, badger, coyote, skunk, rattlesnake, sidewinder and Gila Monster are most conspicuous and diagnostic. Among the birds are the roadrunner, the raven, as well as many pelagic or littoral birds, the pelican and cormorant among them.

The region is one of very low rainfall, limited to the hot summer months, in some places occuring only a few times in a year. Winters are chilly and dry with persistent winds and dust, with the temperature falling down, on rare occasion, to just above the freezing point. Summers are intensely hot, with daily temperatures usually over 100 and the water temperature of the sea along the shore not infrequently as much as 85 degrees. There are great differences between diurnal and nocturnal temperatures, very much influencing the desert life.

Within this region there are several different ecological zones or perhaps sub-zones, varying from the alkaline flats like Playa Noriega, and the alkali-and salt-permeated soils of Desemboque to the more bountiful slopes of the mountains and the irrigated mud-flats around Hermosillo.

For the sake of distinction, I have selected several of the typical localities or zones as a point of reference either because of their ecological distinctions or because of their signficance as a landmark, readily delineating a peculiar habitat. Personally I am familiar only with some of the

[P.1A]

123 As a concrete result of that first trip to Tiburon, I secured a
115 *balsa* (boat) made of *carrizo* canes lashed together with native fibre,
581 which *balsa* Mr. Heye said it was the finest one in North America.

[226] This *balsa* was given to me without hesitation, although it furnished one or two families with sea food.

115 I wish to pay tribute to Senor Roberto Thomson who has been my constant companion, friend, guide and interpreter during the past twenty years, on all my trips to Tiburon and various parts of Mexico. I found him absolutely dependable, using excellent judgment in critical situations. He was honest, fair, intelligent, looking out constantly for my safety and comfort always, enduring hardships cheerfully. A better all-round out-door man I have never seen equaled. In short, he is a real *hombre*, and any *simperico*.

13 Tiburon, or *Shark Island*, long noted for its evil reputation as
181 the home of the most savage and treacherous Indians of North America,
183 lies in latitude 29°north and 112°30' west longitude, in the Gulf of California. It is shaped like a parallelogram about thirty-five miles long and eighteen to twenty miles wide, and lies parallel to the coast of Sonora, Mexico, of which, no doubt, at some remote period, it once formed a part.

It is separated from the mainland, for the most part, by a strait called *El Infernillo*, or The Little Hell, through which the rising
[137] tides pour a resistless flood. It is a desert island and supports a desert arboreal vegetation which includes several varieties of the cactus family and the *mesquite, palo verde, palo fierro, torote, palo blanco, ocotillo* and others. The giant *saguaro, sarbuesa* and *pitahalla (pit-a-haya)* cactus are found here also.

Two desert ranges run lengthwise of the Island, which, on its westward or windward side, terminate in sea-worn cliffs against whose ramparts dash the heavy breakers of the Gulf, and on its eastern side, by long alluvial aprons from the foot of the mountains, sloping gently down to the lovely shell-strewn beaches. From this side the foot of the mountains lies from two to five miles distant. On this, the leeward side of Tiburon, the sea is much calmer, and often, in the early morning, it is as smooth and placid as a lake, reflecting each rosy, lavender and purple tint of the rugged Sierra Seri along the Sonoran coast, as in a mirror. The exquisite loveliness of marvelous sunrises over the pure limpid waters of the *Estrecho Infernillo* is mystical.

• 134 The soil is loose and sandy, unsuitable for cultivation, and im-
241 possible for producing domestic crops of any
142 Kind.